



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Karmi et al. )  
 )  
Attorney Docket No.: QCPA686A1 ) For: OVERHEAD MESSAGE  
 ) UPDATE WITH  
 ) DECENTRALIZED CONTROL  
Application No.: 09/158,938 )  
 )  
Filed: SEPTEMBER 22, 1998 ) Group Art Unit: 2683

APPELLANT'S BRIEF

Hon. Commissioner of Patents  
and Trademarks  
Washington, D.C. 20231

Attention: Examiner Rafael Perez-Gutierrez

Commissioner:

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### **REAL PARTY IN INTEREST**

The real party in interest is Qualcomm, Incorporated, assignee of the present application.

### **RELATED APPEALS AND INTERFERENCES**

There are no related appeals and interferences.

### **STATUS OF CLAIMS**

Claims 1-124 are pending in this Application. Claims 1-124 stand rejected under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Claims 1-43, 48-58, 62, 63, 65-81, and 86-94 stand rejected under 35 USC §103(a) as being unpatentable over Tiedemann, Jr. et al. (US Patent Number 5,392,287) in view of Schwendeman (US Patent Number 5,396,537).

Appellants appeal the rejections of claims 1-124 as stated above.

### **STATUS OF AMENDMENTS**

Appellants filed an amendment and response after final rejection on Nov. 7, 2002. Therein Appellants presented amendments to claims 1 and 24, cancelled claims 39, 40, and 41, and further presented new claims 125-132.

The Examiner has not responded to the after final response as of the filing of the present appeal brief.

## SUMMARY OF THE INVENTION

The system and method of the present invention provides a technique for communicating overhead messages in a wireless communication system, which provides access to a decentralized network while achieving bandwidth savings as well as minimizing power consumption. In one embodiment, a wireless base station which is connected to a decentralized network transmits a sequence of signatures for overhead messages to a mobile unit. The overhead messages and corresponding signatures are not controlled by a central controller. Rather, the signature for each overhead message is generated at the base station. In one embodiment, a hashing function, or other function that allows reproduction at the receiver, is used to generate a unique identifier for the overhead message.

Upon receipt of the overhead message and signature, the mobile unit wakes up, receives the signatures, and compares them to signatures stored at the mobile unit. If the signatures received by the mobile unit are different from the signatures stored at the mobile unit, the mobile unit stays awake to receive the overhead messages to be transmitted by the base station. If the signatures received by the mobile unit are the same as the signatures stored at the mobile unit, the mobile unit may go back to sleep.

As illustrated in FIG. 2, each overhead message has a corresponding signature. The signature identifies the content of the overhead message capsule, which may include multiple messages. In this way, the recipient may identify any change in the overhead message capsule, i.e., new message(s), and choose to decode accordingly. This avoids the redundant decoding of messages already received and decoded.

The signature capsule contains at least one signature. The signature may represent only one overhead message or may represent a group of more than one message (i.e., the signature is changed whenever at least one message

in a group of more than one message is changed). The use of a signature is particularly applicable to a decentralized network, such as that supporting data packet service(s). In such a system, there may be no central controller for controlling updating of overhead messages. Therefore, it is desirable that the signature uniquely identify the overhead message or combination of overhead messages contained in the overhead message capsule.

In an alternate embodiment, the mobile unit wakes up and receives a message from a wireless base station. The mobile unit generates a signature using the message. The mobile unit compares the signature to the signature of a previous message received by the mobile unit. If the signature generated from the message received is the same as the signature of the previous message received, then the mobile unit goes back to sleep. If the signature generated for the message received is different from the signature of the previous message received, then the mobile unit updates operating parameters used for communicating with the base station.

## **ISSUE**

- I. Whether claims 1-124 contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.
- II. Whether claims 1-43, 48-58, 62, 63, 65-81, and 86-94 are patentable over Tiedemann, Jr. et al. (US Patent Number 5,392,287) in view of Schwendeman (US Patent Number 5,396,537).

## **GROUPING OF CLAIMS**

All claims stand or fall together.

## ARGUMENT

### Issue I

The Examiner has rejected claims 1-124 under 35 U.S.C. §112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Appellants hereinbelow specify the errors in the rejection and how the first paragraph of 35 U.S.C. §112 is complied with, including how the specification and drawings: (A) describe the subject matter defined by each of the rejected claims; (B) enable any person skilled in the art to make and use the subject matter defined by each of the rejected claims; and (C) set forth the best mode contemplated by the inventor of carrying out the invention.

The Examiner has rejected said claims 1-124 stating that “the concept of signature has not been clearly defined in the present application.” See the Office Action dated May 7, 2002, Paper No. 24.

Firstly, Appellants submit that the Examiner has incorrectly applied the statute to the pending claims. Specifically, with respect to the written description requirement of 35 U.S.C. §112, there is a strong presumption that an adequate written description of the claimed invention is present when the application is filed. In re Wertheim, 541 F2d 257, 263, “we are of the opinion that the PTO has the initial burden of presenting evidence or reasons why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims.” The Examiner has not provided such evidence or reasons.

Appellants assert that the pending claims do NOT require a critical feature that is not adequately developed in the specification or that is not conventional in the art. Rather than presenting evidence or reasons why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims, the Examiner is arguing the scope of a term in the claims. The Examiner specifically states “[i]f Applicant considers the signature and the use of signature to be the novel invention in the present application in view of the prior art (e.g., the sequence number and the use of

sequence numbers) then the concept of signature should have been clearly defined in the disclosure of the present application.” See page 3 of paper no. 24. As the specification clearly illustrates a signature (see FIG. 2) and details a method of generating a signature that does not use a sequence number (p. 14, ll. 14-30, use of a hashing function), Appellants submit that the Examiner has not provided evidence why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims. In contrast, persons skilled in the art would readily understand the concept of a signature based on the specification and figures originally filed.

Secondly, Appellants refer to claim 1 given as:

1. A method for communicating messages to a mobile station by a wireless communication system providing access to a decentralized data network, the method comprising the steps of:
  - providing a sequence of messages;
  - providing for each respective message a respective signature, the respective signature being separate from the respective message; and
  - comparing the respective signature for any given respective message with at least one signature.

Appellants’ specification as originally filed the concept of signatures is clearly presented as representing a message. Appellants refer to the Summary of the Invention section on page 7 and further to page 13, lines 1-4, which provide:

“The signature capsule contains at least one signature. The signature may represent only one overhead message or may represent a group of more than one message (i.e., the signature is changed whenever at least one message in a group of more than one message is changed.)”

Such use of the term “signature” is clearly related to the problem solved by the present invention. As detailed in the Background section, and specifically, from page 3, line 14 to page 4, line 16, overhead messages are sent to multiple users in a wireless communication system. A mobile unit wakes up to receive the overhead messages. As the overhead messages

may remain the same for a substantial period of time, the mobile unit may waste power decoding a same overhead message multiple times.

In prior art systems with centralized control; sequence numbers were used to identify each message. The mobile unit would only need to decode the sequence number to determine if the corresponding message had been received already.

The prior art method is not directly applicable to de-centralized systems, such as systems supporting packet data service, wherein there is no centralized control. Data may be transmitted in packets, which travel separately across the network, but are re-formed at the receiver. Each router looks at the destination address of the packet, but does not inspect the contents. In such a system, there is typically no central controller for updating overhead messages.

The originally submitted specification describes a wireless communication system employing a signature in FIG. 1, wherein a decentralized network is illustrated. FIG. 2 then clearly illustrates the use of a signature with each overhead message. The signature capsule contains at least one signature. The signature may represent only one overhead message or may represent a group of more than one overhead message (i.e., the signature is changed whenever at least one message in a group of more than one message is changed." See page 12, line 24 to page 13, line 4, and FIG. 2.

The problems of the prior art are solved by the use of a signature that uniquely identifies the overhead message, and thus allows the recipient to identify new messages to decode while ignoring those that have already been received and decoded, while allowing interface with a decentralized network. The present invention provides a signature capsule that changes with any change of the corresponding overhead message capsule. Therefore, the concept of a signature as a message identifier is clearly defined and supported in the prior art and the specification as originally filed.

The Dictionary of Physics 435 (Valerie Illingworth, 2<sup>nd</sup> edition, Penguin Group 1990) defines a signature as "[a] collection of symbols that can be used for

identification purposes.” Such definition encompasses the use of “signature” in the pending claims.

Additionally, in “Internet Routing and Quality of Service” by Graham, I.; Donnelly, S., published in the Journal: Proceedings of the SPIE - The International Society for Optical Engineering, vol.3529, p.289-94, 1998, the concept of a signature is described by the following passage:

“Packets in the network are characterized by a signature derived from the packet header and payload, and so can be recognized at the measurement points.” See abstract.

Further, in “Performance improvements in R-ALOHA protocol with signature” by Qing Guo; Godlewski, P., published in Communication Systems: Towards Global Integration. Singapore ICCS '90. Conference Proceedings p.9-3/1-5 vol.1, the concept of a signature is described in the following passage:

“With this technique, a signature is assigned to the header of each message. In practice this signature is chosen randomly among a set of synchronizing sequences.” See abstract

Appellants clearly detail the implementation of the present invention. Specific examples of signatures generated at the base station are detailed in the originally submitted specification. One such example is given from page 14, line 18 to page 15, line 4. A hashing function is used to generate the signature.

The use of signature as recited in the claims is clearly defined and supported in the specification as originally filed. Such use is supported by the prior art.

Issue II:

The Examiner has rejected the above appealed claims based as unpatentable over Tiedemann in view of Schwendeman. To establish a prima facie case of obviousness three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there



must be a reasonable expectation of success. Finally, the prior art reference(s) must teach or suggest all the claim limitations.

Firstly, Appellants note that the Examiner has incorrectly examined the pending claims believing the term signature to be equivalent to sequence number. Appellants respectfully submit that this is inconsistent with the originally submitted specification, Appellants previous responses, and the definition of signature as given hereinabove. While each signature is an identifier of a corresponding overhead message, the signature is NOT equivalent to a sequence number. Appellants note that the embodiment detailed on page 14, ll. 18-30, describes the use of hashing function to generate a signature. The hashing function result IS NOT a sequence number. Therefore, Appellants assert that there is no basis for the Examiner to arbitrarily select a definition of his choosing.

Appellants respectfully submit that the Examiner has failed to make a prima facie case of obviousness as required as indicated above. The references cited by the Examiner fail to provide a suggestion or motivation to one of ordinary skill in the art to modify the references or to combine the reference teachings.

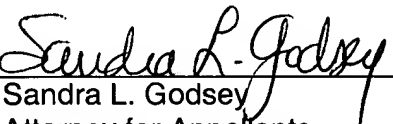
There is no substantial difference between the messages Tiedemann and Schwendeman and therefore, there is no motivation to combine the references. Significantly, the sequence number is included in the message as taught in Tiedemann, and similarly, the transmitted message 200 of Schwendeman also includes the message sequence number 208. See Schwendeman col. 7, lines 17-63. Comparing Tiedemann and Schwendeman, the messages have the same structure. See Schwendeman FIG. 2 and Tiedemann FIG. 1. There is therefore, no motivation to combine the two references. Further, such combination would not result in additional subject matter material to the present application for patent. There is therefore no suggestion or motivation to combine the two references.

Further, the reference(s) must teach each element of the claim. Neither reference, nor the combination, teaches or even suggests a signature which is separate from the corresponding message as recited in Appellants pending claims.

Appellant respectfully submits that the Examiner's rejection of the pending claims under 35 U.S.C. §112 is not supported. Appellants respectfully submit that the Examiner has inappropriately rejected the pending claims on prior art references that do not support a 35 U.S.C. §103(a) rejection. Appellants further respectfully submit that the present Application and the claims appealed are patentable over the prior art of record.

Respectfully submitted,

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## **APPENDIX A**

### **CLAIMS AS PENDING**

1. A method for communicating messages to a mobile station by a wireless communication system providing access to a decentralized data network, the method comprising the steps of:
  - providing a sequence of messages;
  - providing for each respective message a respective signature, the respective signature being separate from the respective message; and
  - comparing the respective signature for any given respective message with at least one signature.
2. The method of claim 1, further comprising receiving the respective signature for a respective message.
3. The method of claim 1, further comprising:
  - receiving the respective signature for a respective message;and
  - sleeping after receiving the signature.
4. The method of claim 1 further comprising:
  - receiving the respective signature for a respective message;and
  - sleeping after receiving the respective signature if the respective signature matches a corresponding signature from the at least one signature.
5. The method of claim 1 further comprising:
  - receiving the respective signature for a respective message;

sleeping after receiving the respective signature if the respective signature matches a corresponding signature from the at least one signature;  
and

transmitting the respective message, wherein sleeping occurs while the respective message is being transmitted.

6. The method of claim 1 further comprising:  
receiving the respective signature for each respective message;  
and  
sleeping if each respective signature matches a corresponding signature from the at least one signature.

7. The method of claim 1 further comprising:  
receiving the respective signature for each respective message;  
sleeping if each respective signature matches a corresponding signature from the at least one signature; and  
transmitting each respective message, wherein sleeping occurs while each respective message is being transmitted.

8. The method of claim 1, further comprising:  
receiving the respective signature for a respective message;  
and  
listening for the respective message if the respective signature does not match a corresponding signature from the at least one signature.

9. The method of claim 1, further comprising:  
receiving the respective signature for a respective message;  
and  
listening for the respective message if the respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received.

10. The method of claim 1, further comprising:

receiving the respective signature for a respective message;  
listening for the respective message if the respective signature  
does not match a corresponding signature from the at least one signature,  
wherein listening is done only until the respective message is received; and  
sleeping after the respective message is received.

11. The method of claim 1, further comprising:  
receiving the respective signature for a respective message;  
listening for the respective message if the respective signature  
does not match a corresponding signature from the at least one signature;  
sleeping after the respective message is received; and  
waking up after sleeping.

12. The method of claim 1, further comprising:  
receiving the respective signature for a respective message;  
listening for the respective message if the respective signature  
does not match a corresponding signature from the at least one signature;  
sleeping after the respective message is received; and  
waking up after sleeping for 5.2 seconds.

13. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for a  
respective message;  
listening at the mobile station for the respective message if the  
respective signature does not match a corresponding signature from the at  
least one signature; and  
sleeping at the mobile station after the respective message is  
received.

14. The method of claim 1, further comprising:  
receiving the respective signature for each respective message.

15. The method of claim 1, further comprising:

receiving the respective signature for each respective message;  
and

listening for a respective message whose respective signature  
does not match a corresponding signature from the at least one signature.

16. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
and

listening for a respective message whose respective signature  
does not match a corresponding signature from the at least one signature;  
wherein listening is done only until the respective message is received.

17. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a respective message whose respective signature  
does not match a corresponding signature from the at least one signature;  
and  
sleeping after the respective message is received.

18. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a respective message whose respective signature does not  
match a corresponding signature from the at least one signature, wherein  
listening is done only until the respective message is received; and  
sleeping for 5.2 seconds after the respective message is  
received.

19. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a respective message whose respective signature does not  
match a corresponding signature from the at least one signature, wherein  
listening is done only until the respective message is received; and  
sleeping after the respective message is received; and

waking up after sleeping.

20. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a respective message whose respective signature  
does not match a corresponding signature from the at least one signature,  
wherein listening is done only until the respective message is received;  
sleeping after the respective message is received; and  
waking up after sleeping for 5.2 seconds.

21. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each  
respective message;  
listening at the mobile station for a respective message whose  
respective signature does not match a corresponding signature from the at  
least one signature, wherein listening is done only until the respective  
message is received;  
sleeping at the mobile station after the respective message is  
received; and  
waking at the mobile station up after sleeping.

22. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each  
respective message;  
listening at the mobile station for a respective message whose  
respective signature does not match a corresponding signature from the at  
least one signature, wherein listening is done only until the respective  
message is received;  
sleeping at the mobile station after the respective message is  
received; and  
waking at the mobile station up after sleeping for 5.2 seconds.

23. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each  
respective message, wherein the respective signature for each respective  
message was transmitted by the wireless communication system;  
listening at the mobile station for a respective message whose  
respective signature does not match a corresponding signature from the at  
least one signature, wherein listening is done only until the respective  
message is received;  
wherein the respective message was transmitted by the wireless  
communication system;  
sleeping at the mobile station after the respective message is  
received; and  
waking at the mobile station up after sleeping.

24. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each  
respective message, wherein the respective signature for each respective  
message was transmitted by the wireless communication system;  
listening at the mobile station for a respective message whose  
respective signature does not match a corresponding signature from the at  
least one signature, wherein listening is done only until the respective  
message is received;  
wherein the respective message was transmitted by the wireless  
communication system;  
sleeping at the mobile station after the respective message is  
received; and  
waking at the mobile station up after sleeping for 5.2 seconds.

25. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;



listening for a first respective message whose respective signature does not match a corresponding signature from the at least one signature; and

listening for a second respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening is done until the second respective message is received, and wherein listening for the second respective message occurs after listening for the first respective message.

26. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a first respective message whose respective signature does not match a corresponding signature from the at least one signature;  
listening for a second respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening is done until the second respective message is received, and wherein listening for the second respective message occurs after listening for the first respective message; and  
sleeping after the second respective message is received.

27. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a first respective message whose respective signature does not match a corresponding signature from the at least one signature;  
listening for a second respective message whose respective signature does not match a corresponding signature from the at least one signature, and wherein listening for the second respective message occurs after listening for the first respective message;

listening for a third respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening for the third respective message is done after listening for the second respective message; and wherein listening for the third respective message is done until the third respective message is received; and

sleeping after the third respective message is received.

28. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for each respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening stops if there are no more messages whose respective signature does not match a corresponding signature from the at least one signature; and

sleeping after listening stops.

29. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for each respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening stops if there are no more messages whose respective signature does not match a corresponding signature from the at least one signature;

sleeping after listening stops; and  
waking up after sleeping.

30. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for each respective message whose respective  
signature does not match a corresponding signature from the at least one  
signature, wherein listening stops if there are no more messages whose  
respective signature does not match a corresponding signature from the at  
least one signature;  
sleeping after listening stops; and  
waking up 5.2 seconds after sleeping.

31. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each  
respective message, wherein the respective signature for each respective  
message is transmitted by the wireless communication system;  
listening at the mobile station for each respective message  
whose respective signature does not match a corresponding signature from  
the at least one signature, wherein listening stops if there are no more  
messages whose respective signature does not match a corresponding  
signature from the at least one signature;  
wherein each respective message is transmitted by the wireless  
communication system;  
sleeping at the mobile station after listening stops; and  
waking up at the mobile station after sleeping.

32. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each  
respective message, wherein the respective signature for each respective  
message is transmitted by the wireless communication system;  
listening at the mobile station for each respective message  
whose respective signature does not match a corresponding signature from  
the at least one signature, wherein listening stops if there are no more

messages whose respective signature does not match a corresponding signature from the at least one signature;

wherein each respective message is transmitted by the wireless communication system;

sleeping at the mobile station after listening stops; and

waking up at the mobile station 5.2 seconds after sleeping.

33. The method of claim 1, further comprising:  
waking up at the mobile station; and  
receiving the respective signature for a respective message at the mobile station.

34. The method of claim 1, further comprising:  
waking up at the mobile station;  
receiving the respective signature for a respective message at the mobile station; and  
listening for the respective message if the respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received.

35. The method of claim 1, further comprising:  
waking up at the mobile station;  
receiving the respective signature for a respective message at the mobile station;  
listening for the respective message if the respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received; and  
sleeping after the respective message is received.

36. The method of claim 1, further comprising:  
waking up at the mobile station;  
receiving the respective signature for each respective message  
at the mobile station;  
listening for a respective message whose respective signature  
does not match a corresponding signature from the at least one signature,  
wherein listening is done only until the respective message is received; and  
sleeping after the respective message is received.

37. The method of claim 1, further comprising:  
waking up at the mobile station;  
receiving the respective signature for each respective message  
at the mobile station;  
listening for each respective message whose respective  
signature does not match a corresponding signature from the at least one  
signature, wherein listening stops if there are no more messages to be whose  
respective signature does not match a corresponding signature from the at  
least one signature; and  
sleeping at the mobile station listening stops.

38. The method of claim 1, wherein the sequence of messages is a  
sequence of overhead messages.

39. The method of claim 1, wherein the sequence of messages is  
periodically transmitted by the wireless communication system.

40. The method of claim 1, wherein the sequence of messages is a  
periodically transmitted by the wireless communication system.

41. The method of claim 1, wherein the sequence of messages is transmitted to at least one mobile station.

42. The method of claim 1, wherein each message is embedded in a message capsule having a plurality of messages.

43. The method of claim 1, wherein providing for each respective message a respective signature comprises hashing each message.

44. The method of claim 1, wherein providing for each message a respective signature comprises hashing each message to generate a first hash, wherein hashing comprises rehashing any message if the first hash of any message matches any of at least one corresponding signature from the at least one signature, wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature.

45. The method of claim 1, wherein providing for each message a respective signature comprises hashing each message to generate a first hash, wherein hashing comprises adding a random value to the first hash if the first hash of any message matches any of at least one corresponding signature from the at least one signature, wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature.

46. The method of claim 1, wherein providing for each message a respective signature comprises hashing each message to generate a first hash, wherein hashing comprises rehashing any message with a random

value if the first hash of any message matches any of at least one corresponding signature from the at least one signature, wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature.

47. The method of claim 1, wherein providing for each message a respective signature comprises hashing each message to generate a first hash, wherein hashing comprises rehashing any message with a random value if the first hash of any message matches any of at least one corresponding signature from the at least one signature, wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature, and wherein the time period  $T_{\text{Delta}}$  is larger than the largest allowed sleep time of any mobile station communicating with the wireless communication system.

48. The method of claim 1, wherein providing for each respective message a respective signature comprises hashing each message to generate a sixteen bit value for the respective signature.

49. The method of claim 1, wherein providing for each message a respective signature comprises hashing each message to generate a thirty-two bit value for the respective signature.

50. The method of claim 1, wherein providing for each message a respective signature comprises giving the respective signature a value stored in a counter.

51. The method of claim 1, wherein providing for each message a respective signature comprises:

incrementing a counter; and

giving the respective signature a value stored in the counter.

52. The method of claim 1, wherein providing for each message a respective signature comprises:

incrementing a counter if any given message does not match a corresponding first message, wherein the corresponding first message was generated at a time before commencing providing a sequence of messages; and

giving the respective signature a value stored in the counter.

53. The method of claim 1, wherein one of the sequence of messages includes an overhead message indicative of base station parameters in the wireless communication system.

54. The method of claim 1, wherein one of the sequence of messages includes an overhead message indicative of base station parameters in the wireless communication system, and wherein the base station parameters include system parameters, access parameters, channel list, and neighbor list parameters.

55. The method of claim 1, wherein one of the sequence of messages includes an overhead message indicative of the wireless communication system's system wide parameters.

56. The method of claim 1, wherein one of the sequence of messages includes an overhead message indicative of the wireless



communication system's system wide parameters, and wherein the system wide parameters include system parameters, access parameters, channel list, and neighbor list parameters.

57. The method of claim 1 further comprising receiving the sequence of messages at the mobile station.

58. The method of claim 1 further comprising receiving the sequence of messages at the mobile station, and wherein providing for each message a respective signature comprises hashing each message at the mobile station.

59. The method of claim 1 further comprising receiving any given one of the sequence of messages at the mobile station;

wherein providing for each message a respective signature comprises hashing each message at the mobile station to generate a first hash for each message,

wherein hashing comprises rehashing any message using a random value if the first hash of any message matches any of at least one corresponding signature from the at least one signature; and

wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature.

60. The method of claim 1 further comprising receiving any given one of the sequence of messages at the mobile station;

wherein providing for each message a respective signature comprises hashing each message at the mobile station to generate a first hash for each message,

wherein hashing comprises rehashing any message using a random value if the first hash of any message matches any of at least one corresponding signature from the at least one signature;

wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature; and

wherein  $T_{\text{Delta}}$  is longer than the longest allowed sleep time for any mobile station communicating with the wireless communication system.

61. The method of claim 1 further comprising:

providing at least one stored message at the mobile station;

receiving the sequence of messages at the mobile station;

wherein each of the at least one stored message has a corresponding message in the sequence of messages;

wherein providing for each respective message a respective signature comprises hashing each message at the mobile station to generate a first hash for each message;

wherein hashing comprises rehashing any message using a random value if the first hash of any message matches any of at least one corresponding signature from the at least one signature;

wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature;

wherein  $T_{\text{Delta}}$  is longer the longest allowed sleep time of any mobile station communicating with the wireless system; and

replacing any message from the at least one stored message with a corresponding message from the sequence of messages received at the mobile station if the respective signature of the corresponding message does not match a corresponding signature from the at least one signature.

62. The method of claim 1 further comprising:

providing at least one stored message at the mobile station;

receiving the sequence of messages at the mobile station;  
wherein each of the at least one stored message has a  
corresponding message in the sequence of messages; and  
replacing any message from the at least one stored message  
with a corresponding message from the sequence of messages received at  
the mobile station if the respective signature of the corresponding message  
does not match a corresponding signature from the at least one signature.

63. A method for communicating with a mobile station by way of a forward  
channel in a wireless communication system, the method comprising:  
transmitting a message capsule over the forward channel;  
generating a signature for the message capsule;  
transmitting the signature in a separate signature capsule over the  
forward channel; and  
comparing the signature with one or more signatures previously stored  
at the mobile station.

64. A method for communicating with a mobile station by way of a forward  
channel in a wireless communication system, the method comprising:  
transmitting a message capsule over the forward channel;  
calculating a signature from the message capsule at the mobile  
station; and  
comparing the signature with one or more signatures previously stored  
at the mobile station.

65. An apparatus for communicating with a mobile station by way of a  
forward channel in a wireless communication system, comprising:  
a base station configured to:  
transmit a message capsule over the forward channel;  
generate a signature for the message capsule; and

transmit a signature in a separate signature capsule over the forward channel; and

a mobile station configured to compare the signature with one or more signatures previously stored at said mobile station.

66. An apparatus as claimed in claim 65, wherein said mobile station is further configured to sleep if the signature matches one of the previously stored signatures.

67. An apparatus as claimed in claim 66, wherein said mobile station is configured to sleep while the message capsule is being transmitted over the forward channel.

68. An apparatus as claimed in claim 65, wherein said mobile station is further configured to listen for the message capsule if the signature does not match one of the previously stored signatures.

69. An apparatus as claimed in claim 68, wherein said mobile station is configured to listen only until the message capsule is received.

70. An apparatus as claimed in claim 69, wherein said mobile station is configured to sleep after the message capsule is received.

71. An apparatus as claimed in claim 70, wherein said mobile station is configured to wake up after sleeping.

72. An apparatus as claimed in claim 70, wherein said mobile station is configured to wake up after sleeping for 5.2 seconds.

73. An apparatus as claimed in claim 68, wherein said mobile station is configured to listen for a second message capsule whose signature does not match one of the previously stored signatures, wherein the listening is done until the second message capsule is received.

74. An apparatus as claimed in claim 73, wherein said mobile station is configured to sleep after the second message capsule is received.

75. An apparatus as claimed in claim 73, wherein said mobile station is further configured to listen for a third message capsule whose signature does not match one of the previously stored signatures, wherein the listening is done until the third message capsule is received.

76. An apparatus as claimed in claim 75, wherein said mobile station is configured to sleep after the third message capsule is received.

77. An apparatus as claimed in claim 68, wherein said mobile station is configured to stop listening if there are no more message capsules whose signatures do not match one of the previously stored signatures.

78. An apparatus as claimed in claim 65, wherein the message capsule is one of a sequence of message capsules carrying overhead messages.

79. An apparatus as claimed in claim 78, wherein the sequence is periodically transmitted by the wireless communication system.

80. An apparatus as claimed in claim 78, wherein the sequence is aperiodically transmitted by the wireless communication system.

81. An apparatus as claimed in claim 65, wherein the signature is generated by hashing the message capsule.

82. An apparatus as claimed in claim 81, wherein the hashing comprises hashing the message capsule to generate a first hash and rehashing the message capsule if the first hash of the message matches a signature of a previous message capsule.

83. An apparatus as claimed in claim 82, wherein the rehashing comprises adding a random value to the first hash.

84. An apparatus as claimed in claim 82, wherein the rehashing is done if the signature of a previous message capsule was generated within a time period  $T_{\text{Delta}}$ .

85. An apparatus as claimed in claim 84, wherein the time period  $T_{\text{Delta}}$  is larger than the largest allowed sleep time of any mobile station that could be communicated with the wireless communication system.

86. An apparatus as claimed in claim 81, wherein the hashing is arranged to generate a sixteen bit value for the signature.

87. An apparatus as claimed in claim 81, wherein the hashing is arranged to generate a thirty-two bit value for the signature.

88. An apparatus as claimed in claim 65, wherein the signature is generated by assigning a value stored in a counter.

89. An apparatus as claimed in claim 88, wherein the counter is incremented after a signature is generated.

90. An apparatus as claimed in claim 88, wherein the counter is incremented if the message capsule is different than a previously transmitted message capsule.

91. An apparatus as claimed in claim 65, wherein the message comprises an overhead message indicative of base station parameters in the wireless communication system.

92. An apparatus as claimed in claim 91, wherein the base station parameters include system parameters, access parameters, channel list, and neighbor list parameters.

93. An apparatus as claimed in claim 65, wherein the message comprises an overhead message indicative of system-wide parameters of the wireless communication system.

94. An apparatus as claimed in claim 93, wherein the system wide parameters include system parameters, access parameters, channel list, and neighbor list parameters.

95. An apparatus for communicating with a mobile station by way of a forward channel in a wireless communication system, the apparatus comprising:

- a base station configured to transmit a message capsule over the forward channel; and

- said mobile station configured to:

- generate a signature from the message capsule; and

- compare the signature with one or more signatures previously stored at the mobile station.

96. An apparatus as claimed in claim 95, wherein said mobile station is further configured to sleep if the signature matches one of the previously stored signatures.

97. An apparatus as claimed in claim 96, wherein said mobile station is configured to sleep while the message capsule is being transmitted over the forward channel.

98. An apparatus as claimed in claim 95, wherein said mobile station is further configured to listen for the message capsule if the signature does not match one of the previously stored signatures.

99. An apparatus as claimed in claim 98, wherein said mobile station is configured to listen only until the message capsule is received.

100. An apparatus as claimed in claim 99, wherein said mobile station is configured to sleep after the message capsule is received.

101. An apparatus as claimed in claim 100, wherein said mobile station is configured to wake up after sleeping.

102. An apparatus as claimed in claim 100, wherein said mobile station is configured to wake up after sleeping for 5.2 seconds.

103. An apparatus as claimed in claim 98, wherein said mobile station is configured to listen for a second message capsule whose signature does not match one of the previously stored signatures, wherein the listening is done until the second message capsule is received.

104. An apparatus as claimed in claim 103, wherein said mobile station is configured to sleep after the second message capsule is received.

105. An apparatus as claimed in claim 103, wherein said mobile station is further configured to listen for a third message capsule whose signature does not match one of the previously stored signatures, wherein the listening is done until the third message capsule is received.

106. An apparatus as claimed in claim 105, wherein said mobile station is configured to sleep after the third message capsule is received.

107. An apparatus as claimed in claim 98, wherein said mobile station is further configured to stop listening if there are no more message capsules whose signatures do not match one of the previously stored signatures.



108. An apparatus as claimed in claim 95, wherein the message capsule is one of a sequence of message capsules carrying overhead messages.

109. An apparatus as claimed in claim 108, wherein the sequence is periodically transmitted by the wireless communication system.

110. An apparatus as claimed in claim 108, wherein the sequence is aperiodically transmitted by the wireless communication system.

111. An apparatus as claimed in claim 95, wherein the signature is generated by hashing the message capsule.

112. An apparatus as claimed in claim 111, wherein the hashing comprises hashing the message capsule to generate a first hash and rehashing the message capsule if the first hash of the message matches a signature of a previous message capsule.

113. An apparatus as claimed in claim 112, wherein the rehashing comprises adding a random value to the first hash.

114. An apparatus as claimed in claim 112, wherein the rehashing is done if the signature of a previous message capsule was generated within a time period  $T_{\text{Delta}}$ .

115. An apparatus as claimed in claim 114, wherein the time period  $T_{\text{Delta}}$  is larger than the largest allowed sleep time of any mobile station that could be communicated with the wireless communication system.

116. An apparatus as claimed in claim 111, wherein the hashing is arranged to generate a sixteen bit value for the signature.

117. An apparatus as claimed in claim 111, wherein the hashing is arranged to generate a thirty-two bit value for the signature.

118. An apparatus as claimed in claim 95, wherein the signature is generated by assigning a value stored in a counter.

119. An apparatus as claimed in claim 118, wherein the counter is incremented after a signature is generated.

120. An apparatus as claimed in claim 118, further comprising incrementing the counter if the message capsule is different than a previously transmitted message capsule.

121. An apparatus as claimed in claim 95, wherein the message comprises an overhead message indicative of base station parameters in the wireless communication system.

122. An apparatus as claimed in claim 121, wherein the base station parameters include system parameters, access parameters, channel list, and neighbor list parameters.

123. An apparatus as claimed in claim 95, wherein the message comprises an overhead message indicative of system-wide parameters of the wireless communication system.

124. An apparatus as claimed in claim 123, wherein the system wide parameters include system parameters, access parameters, channel list, and neighbor list parameters.

## APPENDIX B

### CLAIMS AS PRESENTED AFTER FINAL

1. (Amended) A method for communicating messages to a mobile station by a wireless communication system providing access to a decentralized data network, the method comprising the steps of:
  - providing a set of overhead messages in an overhead message capsule;
  - providing a signature corresponding to the set of overhead messages, the signature provided in a signature capsule;
  - modifying the set of overhead messages in the overhead message capsule;
  - and
  - changing the signature in response to modifying the set of overhead messages.
2. The method of claim 1, further comprising receiving the respective signature for a respective message.
3. The method of claim 1, further comprising:
  - receiving the respective signature for a respective message;
  - and
  - sleeping after receiving the signature.
4. The method of claim 1 further comprising:
  - receiving the respective signature for a respective message;
  - and
  - sleeping after receiving the respective signature if the respective signature matches a corresponding signature from the at least one signature.
5. The method of claim 1 further comprising:

receiving the respective signature for a respective message;  
sleeping after receiving the respective signature if the respective signature matches a corresponding signature from the at least one signature;  
and

transmitting the respective message, wherein sleeping occurs while the respective message is being transmitted.

6. The method of claim 1 further comprising:  
receiving the respective signature for each respective message;  
and  
sleeping if each respective signature matches a corresponding signature from the at least one signature.

7. The method of claim 1 further comprising:  
receiving the respective signature for each respective message;  
sleeping if each respective signature matches a corresponding signature from the at least one signature; and  
transmitting each respective message, wherein sleeping occurs while each respective message is being transmitted.

8. The method of claim 1, further comprising:  
receiving the respective signature for a respective message;  
and  
listening for the respective message if the respective signature does not match a corresponding signature from the at least one signature.

9. The method of claim 1, further comprising:  
receiving the respective signature for a respective message;  
and  
listening for the respective message if the respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received.

10. The method of claim 1, further comprising:  
receiving the respective signature for a respective message;  
listening for the respective message if the respective signature  
does not match a corresponding signature from the at least one signature,  
wherein listening is done only until the respective message is received; and  
sleeping after the respective message is received.
11. The method of claim 1, further comprising:  
receiving the respective signature for a respective message;  
listening for the respective message if the respective signature  
does not match a corresponding signature from the at least one signature;  
sleeping after the respective message is received; and  
waking up after sleeping.
12. The method of claim 1, further comprising:  
receiving the respective signature for a respective message;  
listening for the respective message if the respective signature  
does not match a corresponding signature from the at least one signature;  
sleeping after the respective message is received; and  
waking up after sleeping for 5.2 seconds.
13. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for a  
respective message;  
listening at the mobile station for the respective message if the  
respective signature does not match a corresponding signature from the at  
least one signature; and  
sleeping at the mobile station after the respective message is  
received.
14. The method of claim 1, further comprising:  
receiving the respective signature for each respective message.

15. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
and  
listening for a respective message whose respective signature  
does not match a corresponding signature from the at least one signature.
16. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
and  
listening for a respective message whose respective signature  
does not match a corresponding signature from the at least one signature;  
wherein listening is done only until the respective message is received.
17. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a respective message whose respective signature  
does not match a corresponding signature from the at least one signature;  
and  
sleeping after the respective message is received.
18. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a respective message whose respective signature does not  
match a corresponding signature from the at least one signature, wherein  
listening is done only until the respective message is received; and  
sleeping for 5.2 seconds after the respective message is  
received.
19. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;

listening for a respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received; and  
sleeping after the respective message is received; and  
waking up after sleeping.

20. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received;  
sleeping after the respective message is received; and  
waking up after sleeping for 5.2 seconds.

21. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each respective message;  
listening at the mobile station for a respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received;  
sleeping at the mobile station after the respective message is received; and  
waking at the mobile station up after sleeping.

22. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each respective message;  
listening at the mobile station for a respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received;

sleeping at the mobile station after the respective message is received; and  
waking at the mobile station up after sleeping for 5.2 seconds.

23. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each respective message, wherein the respective signature for each respective message was transmitted by the wireless communication system;  
listening at the mobile station for a respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received;  
wherein the respective message was transmitted by the wireless communication system;  
sleeping at the mobile station after the respective message is received; and  
waking at the mobile station up after sleeping.

24. (Once Amended) The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each respective message, wherein the respective signature for each respective message was transmitted by the wireless communication system;  
listening at the mobile station for a respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received;  
wherein the respective message was transmitted by the wireless communication system;  
sleeping at the mobile station after the respective message is received; and  
waking up at the mobile station after sleeping for 5.2 seconds.



25. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a first respective message whose respective  
signature does not match a corresponding signature from the at least one  
signature; and  
listening for a second respective message whose respective  
signature does not match a corresponding signature from the at least one  
signature, wherein listening is done until the second respective message is  
received, and wherein listening for the second respective message occurs  
after listening for the first respective message.
26. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a first respective message whose respective  
signature does not match a corresponding signature from the at least one  
signature;  
listening for a second respective message whose respective  
signature does not match a corresponding signature from the at least one  
signature, wherein listening is done until the second respective message is  
received, and wherein listening for the second respective message occurs  
after listening for the first respective message; and  
sleeping after the second respective message is received.
27. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for a first respective message whose respective  
signature does not match a corresponding signature from the at least one  
signature;  
listening for a second respective message whose respective  
signature does not match a corresponding signature from the at least one  
signature, and wherein listening for the second respective message occurs  
after listening for the first respective message;

listening for a third respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening for the third respective message is done after listening for the second respective message; and wherein listening for the third respective message is done until the third respective message is received; and

sleeping after the third respective message is received.

28. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for each respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening stops if there are no more messages whose respective signature does not match a corresponding signature from the at least one signature; and  
sleeping after listening stops.

29. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for each respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening stops if there are no more messages whose respective signature does not match a corresponding signature from the at least one signature;  
sleeping after listening stops; and  
waking up after sleeping.

30. The method of claim 1, further comprising:  
receiving the respective signature for each respective message;  
listening for each respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening stops if there are no more messages whose

respective signature does not match a corresponding signature from the at least one signature;

sleeping after listening stops; and  
waking up 5.2 seconds after sleeping.

31. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each respective message, wherein the respective signature for each respective message is transmitted by the wireless communication system;

listening at the mobile station for each respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening stops if there are no more messages whose respective signature does not match a corresponding signature from the at least one signature;

wherein each respective message is transmitted by the wireless communication system;

sleeping at the mobile station after listening stops; and  
waking up at the mobile station after sleeping.

32. The method of claim 1, further comprising:  
receiving at the mobile station the respective signature for each respective message, wherein the respective signature for each respective message is transmitted by the wireless communication system;

listening at the mobile station for each respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening stops if there are no more messages whose respective signature does not match a corresponding signature from the at least one signature;

wherein each respective message is transmitted by the wireless communication system;

sleeping at the mobile station after listening stops; and  
waking up at the mobile station 5.2 seconds after sleeping.

33. The method of claim 1, further comprising:  
waking up at the mobile station; and  
receiving the respective signature for a respective message at  
the mobile station.
34. The method of claim 1, further comprising:  
waking up at the mobile station;  
receiving the respective signature for a respective message at  
the mobile station; and  
listening for the respective message if the respective signature  
does not match a corresponding signature from the at least one signature,  
wherein listening is done only until the respective message is received.
35. The method of claim 1, further comprising:  
waking up at the mobile station;  
receiving the respective signature for a respective message at  
the mobile station;  
listening for the respective message if the respective signature  
does not match a corresponding signature from the at least one signature,  
wherein listening is done only until the respective message is received; and  
sleeping after the respective message is received.
36. The method of claim 1, further comprising:  
waking up at the mobile station;  
receiving the respective signature for each respective message  
at the mobile station;  
listening for a respective message whose respective signature  
does not match a corresponding signature from the at least one signature,  
wherein listening is done only until the respective message is received; and  
sleeping after the respective message is received.
37. The method of claim 1, further comprising:

waking up at the mobile station;  
receiving the respective signature for each respective message  
at the mobile station;  
listening for each respective message whose respective  
signature does not match a corresponding signature from the at least one  
signature, wherein listening stops if there are no more messages to be whose  
respective signature does not match a corresponding signature from the at  
least one signature; and  
sleeping at the mobile station listening stops.

38. The method of claim 1, wherein the sequence of messages is a  
sequence of overhead messages.

39. Cancelled

40. Cancelled

41. Cancelled

42. The method of claim 1, wherein each message is embedded in  
a message capsule having a plurality of messages.

43. The method of claim 1, wherein providing for each respective  
message a respective signature comprises hashing each message.

44. The method of claim 1, wherein providing for each message a  
respective signature comprises hashing each message to generate a first  
hash, wherein hashing comprises rehashing any message if the first hash of  
any message matches any of at least one corresponding signature from the  
at least one signature, wherein the at least one corresponding signature was  
generated within a time period  $T_{\text{Delta}}$  before commencing providing for each  
message a respective signature.

45. The method of claim 1, wherein providing for each message a respective signature comprises hashing each message to generate a first hash, wherein hashing comprises adding a random value to the first hash if the first hash of any message matches any of at least one corresponding signature from the at least one signature, wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature.

46. The method of claim 1, wherein providing for each message a respective signature comprises hashing each message to generate a first hash, wherein hashing comprises rehashing any message with a random value if the first hash of any message matches any of at least one corresponding signature from the at least one signature, wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature.

47. The method of claim 1, wherein providing for each message a respective signature comprises hashing each message to generate a first hash, wherein hashing comprises rehashing any message with a random value if the first hash of any message matches any of at least one corresponding signature from the at least one signature, wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature, and wherein the time period  $T_{\text{Delta}}$  is larger than the largest allowed sleep time of any mobile station communicating with the wireless communication system.

48. The method of claim 1, wherein providing for each respective message a respective signature comprises hashing each message to generate a sixteen bit value for the respective signature.

49. The method of claim 1, wherein providing for each message a respective signature comprises hashing each message to generate a thirty-two bit value for the respective signature.

50. The method of claim 1, wherein providing for each message a respective signature comprises giving the respective signature a value stored in a counter.

51. The method of claim 1, wherein providing for each message a respective signature comprises:

incrementing a counter; and  
giving the respective signature a value stored in the counter.

52. The method of claim 1, wherein providing for each message a respective signature comprises:

incrementing a counter if any given message does not match a corresponding first message, wherein the corresponding first message was generated at a time before commencing providing a sequence of messages;  
and

giving the respective signature a value stored in the counter.

53. The method of claim 1, wherein one of the sequence of messages includes an overhead message indicative of base station parameters in the wireless communication system.

54. The method of claim 1, wherein one of the sequence of messages includes an overhead message indicative of base station parameters in the wireless communication system, and wherein the base station parameters include system parameters, access parameters, channel list, and neighbor list parameters.

55. The method of claim 1, wherein one of the sequence of messages includes an overhead message indicative of the wireless communication system's system wide parameters.

56. The method of claim 1, wherein one of the sequence of messages includes an overhead message indicative of the wireless communication system's system wide parameters, and wherein the system wide parameters include system parameters, access parameters, channel list, and neighbor list parameters.

57. The method of claim 1 further comprising receiving the sequence of messages at the mobile station.

58. The method of claim 1 further comprising receiving the sequence of messages at the mobile station, and wherein providing for each message a respective signature comprises hashing each message at the mobile station.

59. The method of claim 1 further comprising receiving any given one of the sequence of messages at the mobile station;

wherein providing for each message a respective signature comprises hashing each message at the mobile station to generate a first hash for each message,

wherein hashing comprises rehashing any message using a random value if the first hash of any message matches any of at least one corresponding signature from the at least one signature; and

wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature.

60. The method of claim 1 further comprising receiving any given one of the sequence of messages at the mobile station;

wherein providing for each message a respective signature comprises hashing each message at the mobile station to generate a first hash for each message,



wherein hashing comprises rehashing any message using a random value if the first hash of any message matches any of at least one corresponding signature from the at least one signature;

wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature; and

wherein  $T_{\text{Delta}}$  is longer than the longest allowed sleep time for any mobile station communicating with the wireless communication system.

61. The method of claim 1 further comprising:

providing at least one stored message at the mobile station;

receiving the sequence of messages at the mobile station;

wherein each of the at least one stored message has a corresponding message in the sequence of messages;

wherein providing for each respective message a respective signature comprises hashing each message at the mobile station to generate a first hash for each message;

wherein hashing comprises rehashing any message using a random value if the first hash of any message matches any of at least one corresponding signature from the at least one signature;

wherein the at least one corresponding signature was generated within a time period  $T_{\text{Delta}}$  before commencing providing for each message a respective signature;

wherein  $T_{\text{Delta}}$  is longer the longest allowed sleep time of any mobile station communicating with the wireless system; and

replacing any message from the at least one stored message with a corresponding message from the sequence of messages received at the mobile station if the respective signature of the corresponding message does not match a corresponding signature from the at least one signature.

62. The method of claim 1 further comprising:

providing at least one stored message at the mobile station;

receiving the sequence of messages at the mobile station;

wherein each of the at least one stored message has a corresponding message in the sequence of messages; and  
replacing any message from the at least one stored message with a corresponding message from the sequence of messages received at the mobile station if the respective signature of the corresponding message does not match a corresponding signature from the at least one signature.

63. A method for communicating with a mobile station by way of a forward channel in a wireless communication system, the method comprising:  
transmitting a message capsule over the forward channel;  
generating a signature for the message capsule;  
transmitting the signature in a separate signature capsule over the forward channel; and  
comparing the signature with one or more signatures previously stored at the mobile station.

64. A method for communicating with a mobile station by way of a forward channel in a wireless communication system, the method comprising:  
transmitting a message capsule over the forward channel;  
calculating a signature from the message capsule at the mobile station; and  
comparing the signature with one or more signatures previously stored at the mobile station.

65. An apparatus for communicating with a mobile station by way of a forward channel in a wireless communication system, comprising:  
a base station configured to:  
transmit a message capsule over the forward channel;  
generate a signature for the message capsule; and  
transmit a signature in a separate signature capsule over the forward channel; and  
a mobile station configured to compare the signature with one or more signatures previously stored at said mobile station.

66. An apparatus as claimed in claim 65, wherein said mobile station is further configured to sleep if the signature matches one of the previously stored signatures.

67. An apparatus as claimed in claim 66, wherein said mobile station is configured to sleep while the message capsule is being transmitted over the forward channel.

68. An apparatus as claimed in claim 65, wherein said mobile station is further configured to listen for the message capsule if the signature does not match one of the previously stored signatures.

69. An apparatus as claimed in claim 68, wherein said mobile station is configured to listen only until the message capsule is received.

70. An apparatus as claimed in claim 69, wherein said mobile station is configured to sleep after the message capsule is received.

71. An apparatus as claimed in claim 70, wherein said mobile station is configured to wake up after sleeping.

72. An apparatus as claimed in claim 70, wherein said mobile station is configured to wake up after sleeping for 5.2 seconds.

73. An apparatus as claimed in claim 68, wherein said mobile station is configured to listen for a second message capsule whose signature does not match one of the previously stored signatures, wherein the listening is done until the second message capsule is received.

74. An apparatus as claimed in claim 73, wherein said mobile station is configured to sleep after the second message capsule is received.

75. An apparatus as claimed in claim 73, wherein said mobile station is further configured to listen for a third message capsule whose signature does not match one of the previously stored signatures, wherein the listening is done until the third message capsule is received.

76. An apparatus as claimed in claim 75, wherein said mobile station is configured to sleep after the third message capsule is received.

77. An apparatus as claimed in claim 68, wherein said mobile station is configured to stop listening if there are no more message capsules whose signatures do not match one of the previously stored signatures.

79. An apparatus as claimed in claim 65, wherein the message capsule is one of a sequence of message capsules carrying overhead messages.

79. An apparatus as claimed in claim 78, wherein the sequence is periodically transmitted by the wireless communication system.

80. An apparatus as claimed in claim 78, wherein the sequence is aperiodically transmitted by the wireless communication system.

81. An apparatus as claimed in claim 65, wherein the signature is generated by hashing the message capsule.

82. An apparatus as claimed in claim 81, wherein the hashing comprises hashing the message capsule to generate a first hash and rehashing the message capsule if the first hash of the message matches a signature of a previous message capsule.

83. An apparatus as claimed in claim 82, wherein the rehashing comprises adding a random value to the first hash.

84. An apparatus as claimed in claim 82, wherein the rehashing is done if the signature of a previous message capsule was generated within a time period  $T_{\text{Delta}}$ .

85. An apparatus as claimed in claim 84, wherein the time period  $T_{\text{Delta}}$  is larger than the largest allowed sleep time of any mobile station that could be communicated with the wireless communication system.

86. An apparatus as claimed in claim 81, wherein the hashing is arranged to generate a sixteen bit value for the signature.

87. An apparatus as claimed in claim 81, wherein the hashing is arranged to generate a thirty-two bit value for the signature.

88. An apparatus as claimed in claim 65, wherein the signature is generated by assigning a value stored in a counter.

89. An apparatus as claimed in claim 88, wherein the counter is incremented after a signature is generated.

90. An apparatus as claimed in claim 88, wherein the counter is incremented if the message capsule is different than a previously transmitted message capsule.

91. An apparatus as claimed in claim 65, wherein the message comprises an overhead message indicative of base station parameters in the wireless communication system.

92. An apparatus as claimed in claim 91, wherein the base station parameters include system parameters, access parameters, channel list, and neighbor list parameters.

93. An apparatus as claimed in claim 65, wherein the message comprises an overhead message indicative of system-wide parameters of the wireless communication system.

94. An apparatus as claimed in claim 93, wherein the system wide parameters include system parameters, access parameters, channel list, and neighbor list parameters.

95. An apparatus for communicating with a mobile station by way of a forward channel in a wireless communication system, the apparatus comprising:

a base station configured to transmit a message capsule over the forward channel; and

said mobile station configured to:

generate a signature from the message capsule; and

compare the signature with one or more signatures previously stored at the mobile station.

96. An apparatus as claimed in claim 95, wherein said mobile station is further configured to sleep if the signature matches one of the previously stored signatures.

97. An apparatus as claimed in claim 96, wherein said mobile station is configured to sleep while the message capsule is being transmitted over the forward channel.

98. An apparatus as claimed in claim 95, wherein said mobile station is further configured to listen for the message capsule if the signature does not match one of the previously stored signatures.

99. An apparatus as claimed in claim 98, wherein said mobile station is configured to listen only until the message capsule is received.

100. An apparatus as claimed in claim 99, wherein said mobile station is configured to sleep after the message capsule is received.

101. An apparatus as claimed in claim 100, wherein said mobile station is configured to wake up after sleeping.

102. An apparatus as claimed in claim 100, wherein said mobile station is configured to wake up after sleeping for 5.2 seconds.

103. An apparatus as claimed in claim 98, wherein said mobile station is configured to listen for a second message capsule whose signature does not match one of the previously stored signatures, wherein the listening is done until the second message capsule is received.

104. An apparatus as claimed in claim 103, wherein said mobile station is configured to sleep after the second message capsule is received.

105. An apparatus as claimed in claim 103, wherein said mobile station is further configured to listen for a third message capsule whose signature does not match one of the previously stored signatures, wherein the listening is done until the third message capsule is received.

106. An apparatus as claimed in claim 105, wherein said mobile station is configured to sleep after the third message capsule is received.

107. An apparatus as claimed in claim 98, wherein said mobile station is further configured to stop listening if there are no more message capsules whose signatures do not match one of the previously stored signatures.

108. An apparatus as claimed in claim 95, wherein the message capsule is one of a sequence of message capsules carrying overhead messages.

109. An apparatus as claimed in claim 108, wherein the sequence is periodically transmitted by the wireless communication system.
110. An apparatus as claimed in claim 108, wherein the sequence is a periodically transmitted by the wireless communication system.
111. An apparatus as claimed in claim 95, wherein the signature is generated by hashing the message capsule.
112. An apparatus as claimed in claim 111, wherein the hashing comprises hashing the message capsule to generate a first hash and rehashing the message capsule if the first hash of the message matches a signature of a previous message capsule.
113. An apparatus as claimed in claim 112, wherein the rehashing comprises adding a random value to the first hash.
114. An apparatus as claimed in claim 112, wherein the rehashing is done if the signature of a previous message capsule was generated within a time period  $T_{\text{Delta}}$ .
115. An apparatus as claimed in claim 114, wherein the time period  $T_{\text{Delta}}$  is larger than the largest allowed sleep time of any mobile station that could be communicated with the wireless communication system.
116. An apparatus as claimed in claim 111, wherein the hashing is arranged to generate a sixteen bit value for the signature.
117. An apparatus as claimed in claim 111, wherein the hashing is arranged to generate a thirty-two bit value for the signature.
118. An apparatus as claimed in claim 95, wherein the signature is generated by assigning a value stored in a counter.



119. An apparatus as claimed in claim 118, wherein the counter is incremented after a signature is generated.

120. An apparatus as claimed in claim 118, further comprising incrementing the counter if the message capsule is different than a previously transmitted message capsule.

121. An apparatus as claimed in claim 95, wherein the message comprises an overhead message indicative of base station parameters in the wireless communication system.

122. An apparatus as claimed in claim 121, wherein the base station parameters include system parameters, access parameters, channel list, and neighbor list parameters.

123. An apparatus as claimed in claim 95, wherein the message comprises an overhead message indicative of system-wide parameters of the wireless communication system.

124. An apparatus as claimed in claim 123, wherein the system wide parameters include system parameters, access parameters, channel list, and neighbor list parameters.

125. (New) The method of claim 1, wherein the set of overhead messages  
includes at least one overhead message, and  
wherein providing the signature comprises providing the signature  
as a function of the at least one overhead message.

126. (New) A method for communicating messages to a mobile station by a base station, the method comprising the steps of:  
providing a set of overhead messages in an overhead message capsule;  
providing a signature corresponding to the set of overhead messages, the signature provided in a signature capsule; and  
changing the signature in response to modifying the set of overhead messages.
127. (New) The method of claim 126 wherein the set of overhead messages includes at least one overhead message, and  
wherein providing the signature comprises providing the signature as a function of the at least one overhead message.
128. (New) A method for communicating messages in a wireless communication system, the method comprising the steps of:  
providing a set of overhead messages in an overhead message capsule; and  
providing an overhead message indicator corresponding to the set of overhead messages, the overhead message indicator provided in a capsule; and  
changing the overhead message indicator in response to modifying the set of overhead messages.
129. (New) A base station apparatus for communicating messages, the base station comprising:  
means for providing a set of overhead messages in an overhead message capsule;  
means for providing a signature corresponding to the set of overhead messages, the signature provided in a signature capsule;

means for modifying the set of overhead messages in the overhead message capsule; and

means for changing the signature in response to modifying the set of overhead messages.

130. (New) A base station apparatus for communicating messages to a mobile station, the base station comprising:

means for providing a set of overhead messages in an overhead message capsule; and

means for providing an overhead message indicator corresponding to the set of overhead messages, the overhead message indicator provided in a capsule; and

means for changing the overhead message indicator in response to modifying the set of overhead messages.

131. (New) A mobile station apparatus for receiving messages from a base station, the remote station apparatus comprising:

means for receiving a set of overhead messages in an overhead message capsule;

means for generating a signature corresponding to the set of overhead messages;

means for comparing the signature with at least one previously stored signature.

132. (New) A mobile station apparatus for receiving messages from a base station, the remote station apparatus comprising:

means for receiving a set of overhead messages in an overhead message capsule;

means for generating a overhead message indicator corresponding to the set of overhead messages;

means for comparing the overhead message indicator with at least one previously stored overhead message indicator.

MARKED UP CLAIMS 1 AND 24:

1. (Amended) A method for communicating messages to a mobile station by a wireless communication system providing access to a decentralized data network, the method comprising the steps of:

providing a [sequence of messages] a set of overhead messages in an overhead message capsule;

providing [for each respective message a respective signature, the respective signature being separate from the respective message; and] a signature corresponding to the set of overhead messages, the signature provided in a signature capsule;

[comparing the respective signature for any given respective message with at least one signature.]

modifying the set of overhead messages in the overhead message capsule;

and

changing the signature in response to modifying the set of overhead messages.

24. (Amended) The method of claim 1, further comprising:

receiving at the mobile station the respective signature for each respective message, wherein the respective signature for each respective message was transmitted by the wireless communication system;

listening at the mobile station for a respective message whose respective signature does not match a corresponding signature from the at least one signature, wherein listening is done only until the respective message is received;

wherein the respective message was transmitted by the wireless communication system;

sleeping at the mobile station after the respective message is received; and

waking up at the mobile station [up] after sleeping for 5.2 seconds.



PATENT

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Attorney Docket No.:  
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Date: 01/06/2003

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In Re Application of: **Karmi et al.**

Application **09/158,938**

Filed: **SEPTEMBER 22, 1998**

No.:

For: **OVERHEAD MESSAGE UPDATE WITH DECENTRALIZED CONTROL**

**ASSISTANT COMMISSIONER OF PATENTS  
WASHINGTON, D.C. 20231**

Dear Sir:

Transmitted herewith for filing is an Appeal Brief in triplicate in the above identified application.

☐ Applicant is a small entity - a verified statement

☐ is enclosed.

☐ has already been filed.

**RECEIVED**

**JAN 10 2003**

**Technology Center 2600**

In addition to the Appeal Brief, the following documents are enclosed:

☒ Appendix A (claims as appealed)

☒ Appendix B

☐ Appendix C

☐ Fee check in the amount of \$\_\_\_\_\_ is enclosed to pay for any claim and/or extension fees.

☒ Please charge Deposit Account No. 17 - 0026 of QUALCOMM, Incorporated. in the amount of \$ 320.00 .  
The Commissioner is hereby authorized to charge payment of any additional fees which may be required,  
or credit any overpayment, to said Deposit Account No. 17 - 0026. A duplicate of this sheet is enclosed.

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